

CLAIM AMENDMENTS

1. (Currently Amended) A hearing aid, comprising:
an input signal channel having a microphone and providing digital input signals;
a signal path adapted to process said digital input signals in accordance with a predetermined signal processing algorithm to produce a digital output signal, wherein said signal path further comprises at least one signal processing function operating on a warped frequency scale; and
an output conversion means adapted to convert said output signals to an audio output.

2. (Original) The hearing aid of claim 1, wherein said at least one signal processing function further comprises a plurality of cascaded all-pass filters.

3. (Original) The hearing aid of claim 1, wherein said warped frequency scale approximates a Bark scale.

4-29. (Cancelled)

30. (Original) A hearing aid, comprising:
an input signal channel providing digital input signals;
an input data buffer, said input data buffer holding a block of data of size M comprised of a portion of said digital input signals;

a plurality of cascaded all-pass filters comprised of $2M$ cascaded all-pass filters, wherein a first block of said digital input signals pass from said input data buffer through said plurality of cascaded all-pass filters to form a first sequence of delayed samples and wherein a second block of said digital input signals pass from said input data buffer through said plurality of cascaded all-pass filters to form a second sequence of delayed samples, and wherein said first sequence of delayed samples and said second sequence of delayed samples form a combined sequence of delayed samples;

means for windowing a first portion of said combined sequence of delayed samples, wherein said first portion is of size M , wherein a windowed sequence of delayed samples results from said windowing means;

means for applying a $2M$ -point frequency domain transform on said windowed sequence of delayed samples, wherein a warped sequence results from said frequency domain transform applying means;

means for calculating a plurality of frequency domain level estimates of said warped sequence;

means for calculating a plurality of frequency domain gain coefficients from said plurality of frequency domain level estimates;

means for applying an inverse frequency domain transform on said plurality of frequency domain gain coefficients, wherein a set of compression filter coefficients of a compression gain filter result from said inverse frequency domain transform applying means; and

means for convolving a second portion of said combined sequence of delayed samples with said compression filter coefficients, wherein said second portion is of size M, wherein a digital output signal results from said convolving means.

31. (Currently Amended) The ~~dynamic range compressor~~ hearing aid of claim 30, further comprising a hearing aid, wherein the dynamic range compressor is incorporated within said hearing aid.

32. (Currently Amended) The ~~dynamic range compressor~~ hearing aid of claim 30, wherein said plurality of frequency domain gain coefficients comprise a warped time-domain filter.

33. (Currently Amended) The ~~dynamic range compressor~~ hearing aid of claim 30, further comprising a digital-to-analog converter, said digital-to-analog converter converting said digital output signals to analog output signals.

34. (Currently Amended) The ~~dynamic range compressor~~ hearing aid of claim 33, further comprising an output transducer, said output transducer converting said analog output signals to an audio output.

35. (Currently Amended) The ~~dynamic range compressor~~ hearing aid of claim 30, said plurality of cascaded all-pass filters comprising a plurality of first order all-pass filters.

36. (Currently Amended) The ~~dynamic range compressor~~ hearing aid of claim 30, further comprising a digital processor, wherein said digital processor is adapted to provide said windowing means, said means for applying said 2M-point frequency domain transform, said means for calculating said plurality of frequency domain level estimates, said frequency domain gain

coefficients calculating means, said inverse frequency domain transform applying means, and said convolving means.

37. (Currently Amended) The ~~dynamic-range-compressor~~ hearing aid of claim 30, wherein said means for applying said frequency domain transform uses a transform selected from the group consisting of discrete Fourier transforms, fast Fourier transforms, Goertzel transforms, and discrete cosine transforms.

38. (Currently Amended) The ~~dynamic-range-compressor~~ hearing aid of claim 30, further comprising:

an input transducer, said input transducer converting audio input signals to analog input signals; and

an analog-to-digital converter, said analog-to-digital converter converting said analog input signals to said digital input signals.

39. (Currently Amended) The ~~dynamic-range-compressor~~ hearing aid of claim 30, further comprising:

a digital-to-analog converter, said digital-to-analog converter converting said digital output signals to analog output signals; and

an output transducer, said output transducer converting said analog output signals to an audio output.

40. (Original) A method of processing sound in a hearing aid, comprising the steps of:
receiving digital input signals;
passing a portion of said digital input signals through a plurality of cascaded all-pass filters to form a sequence of delayed samples;
windowing said sequence of delayed samples;
applying a frequency domain transform to said windowed sequence of delayed samples to form a warped sequence;
calculating a plurality of frequency domain level estimates from said warped sequence;
calculating a plurality of frequency domain gain coefficients from said plurality of frequency domain level estimates to form a warped time domain filter;

applying an inverse frequency domain transform on said plurality of frequency domain gain coefficients to form a set of compression filter coefficients; and

convolving said sequence of delayed samples with said compression filter coefficients to form a digital output signal.

41. (New) The hearing aid of claim 1, wherein the hearing aid is configured to be mounted on the ear of a user.

42. (New) The hearing aid of claim 1, wherein the hearing aid is an in-the-canal hearing aid.

43. (New) The hearing aid of claim 1, wherein the hearing aid is an in-the-ear hearing aid.

44. (New) The hearing aid of claim 1, wherein the hearing aid is a behind-the-ear hearing aid.